Effects of Midrib Breakage on Corn Performance

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Objective

To evaluate effects of leaf midrib breakage at different stages of corn development on crop performance.

Background

Cooperator: OARDC Western Branch
Seeding Rate: 32,000 plants/acre
Nearest Town: South Charleston
Row Width: 30 inches
Major Soil Type: Kokomo Silt Loam
Plot Length: 6 feet
Previous Crop: Soybean
Planting Date: 4/19/04
Hybrid: Pioneer Brand 33D31
Harvest Date: 9/27/04

Methods

Hail storms and thunderstorms accompanied by strong winds may cause extensive damage to corn leaves, resulting in defoliation and breakage of leaf midribs. Late postemergent application of fertilizers, herbicides, and insecticides can also result in leaf midrib breakage. While effects of defoliation on corn performance are well documented, little information is available on effects of leaf midrib breakage on subsequent corn growth and performance.

The plots were established in a randomized complete block design with three replications. Midribs were broken at the 11-leaf collar stage (V11), 17-leaf collar stage (V17), silking (R1), milk stage (R3) and dough stage (R4). Leaf midribs were broken either at the leaf collar or the midpoint of the leaf.
**Results**


<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield -Bu/A-</th>
<th>Grain Moist</th>
<th>Stalk Lodge</th>
<th>Stalk Rot</th>
<th>Nubbins</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTC‡</td>
<td>258</td>
<td>17.5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>V11 Mid-Leaf</td>
<td>225</td>
<td>18.4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Collar</td>
<td>211</td>
<td>18.7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>V17 Mid-Leaf</td>
<td>189</td>
<td>16.3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Collar</td>
<td>183</td>
<td>18.1</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>R1 Mid-Leaf</td>
<td>209</td>
<td>18.8</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Collar</td>
<td>185</td>
<td>18.4</td>
<td>0</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>R3 Mid-Leaf</td>
<td>214</td>
<td>18.9</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Collar</td>
<td>188</td>
<td>18.3</td>
<td>0</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>R4 Mid-Leaf</td>
<td>243</td>
<td>18.2</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Collar</td>
<td>184</td>
<td>15.5</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

LSD (0.05) 48 NS NS 10 NS

† Location on the leaf where the mid-rib was broken
‡ UTC=Untreated check

**Summary**

Midrib breakage affected grain yields each year. Breaking the leaves at the leaf collar reduced yields more than breakage at mid-leaf. Midrib breakage at silking and milk kernel development stage resulted in greater stalk rot. However there were no significant differences among the midrib treatments for stalk lodging.

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